



South Carolina Electric & Gas Company
P.O. Box 88
Jenkinsville, SC 29065
(803) 345-4344

Gary J. Taylor
Vice President
Nuclear Operations

DS09
17. Chafferton
T. Shapovalov
W. Burton

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Q2 FR 26729
May 20, 1997
(23)

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
MS T-6D-69
Washington, DC 20555 - 0001

Dear Sir:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
COMMENTS ON PROPOSED NRC BULLETIN 96-01,
SUPPLEMENT 1: CONTROL ROD INSERTION PROBLEMS

This letter provides comments on the Nuclear Regulatory Commission's draft Supplement 1 to Bulletin 96-01 which proposes actions to be taken by licensees of Westinghouse and Babcock and Wilcox designed plants to ensure continued operability of control rods.

South Carolina Electric & Gas Company (SCE&G) has reviewed the draft supplement and offers the following comments and observations:

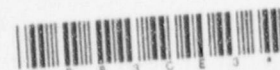
- VCSNS has determined that its shutdown margin (SDM) is preserved at EOC if all RCCAs in fuel assemblies with burnup higher than 40,000 MWD/MTU were to stick at 30 steps out, including one rod stuck full out. The conservatism's in the design basis SDM are sufficient to bound the postulated trip scenarios based on the two "stuck" rod events cited by this Bulletin. Incomplete rod insertion as seen at Wolf Creek and South Texas is, therefore, not a safety issue.

The Westinghouse Owners Group (WOG) notes that many plants have significant additional excess SDM that is over and above the minimum needed to satisfy the SDM requirement. The specific amount of excess SDM depends on the plant's RCCA pattern, the cycle-specific loading pattern, and the burnup point in the cycle.

- Mid-cycle Rod Drop Testing will increase the likelihood of plant transients which challenge safety systems with no measurable increase in safety. The proposed solution delineated in this bulletin supplement, when considering the full scope of plant operations and impact on public safety, poses a more significant risk than the problem.



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Increased rod drop testing to address two (2) isolated events will cause each nuclear plant included in the NRC scope to maneuver their plants multiple times throughout the fuel cycle. The preponderance of industry data (test and trip) has consistently shown that the majority of licensees fuel design will consistently meet the full insertion and time requirements of Technical Specifications.

Even though plant shutdowns are Condition 1 events, plant maneuvering will increase cycle duty on plant equipment and increase the possibility of plant trips. Per Westinghouse data (WCAP - 14333), one out of every five reactor trips occur during startup or shutdown. Should multiple sites in adjoining areas be implementing this test concurrently or in near sequence, this would impact regional power grids and ultimately the electric power consumers.

If the NRC is going to require a utility to challenge plant equipment and operators, there should be a tangible benefit to safety. The actions that SCE&G would be required to take in response to the proposed supplement will result in severe economic penalties and possible plant transients with undesirable consequences that are not commensurate with the safety significance/benefit of the proposed testing at VCSNS. The only way to avoid this increased risk and economic penalties is to design the core (at a cost of approximately \$2,000,000 per cycle) for each cycle so that the imposed limit of 40,000 MWD/MTU was not reached by the end of cycle.

- VCSNS estimates the incremental increase in risk, as measured by Core Damage Frequency (CDF), incurred due to 5-6 rod drop tests over a cycle could exceed $2.0E-06$. This exceeds the regulatory threshold of $1.0E-06$, which would require further justification to proceed for a licensee initiated change. "In these cases, the reviewer should verify that the proposed compensatory measures or plant improvements would clearly offset risk increases from proposed relaxation in current requirements (Draft SRP Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance")." In light of the questionable benefits gained from mid-cycle rod drop testing and the large number of plants effected, this proposed testing appears to be contrary to our common goal of maintaining the risk to the public as low as possible.
- Common factors for the two "stuck" rod events cited by this bulletin and previously by IEN 96-12 were identified by WOG and assessed to have contributed to the events noted. Conclusions reached were that potential problems would occur only if all of the following conditions are met:

Zircaloy 4 thimble tubes
>40,000 MWD/MTU burnup (third fuel cycle)
No IFM grids
High Temperature Plant [$T_{HOT} > 615^{\circ}F$]

This proposed Bulletin supplement does not consider the industry input evaluations and conclusions reached when it requires all plants of Westinghouse or Babcock and Wilcox design, regardless of individual characteristics or design features of the fuel assemblies, to take the prescribed actions. Rather than wholesale or blanket application to the two vendors, some means of identifying susceptibility should be employed as a screening process regardless of vendor.

VCSNS currently uses Westinghouse 17X17 Performance+ and Vantage+ fuel assemblies with ZIRLO™ skeletons and Intermediate Flow Mixing (IFM) grids. The assemblies contain fuel rod cladding, guide thimbles and an instrumentation tube fabricated from the Westinghouse advanced zirconium alloy material ZIRLO™ which has the attributes of reduced growth and greater resistance to guide tube distortion.

- SCE&G recently submitted a report (RC-97-0109, G. J. Taylor to Document Control Desk, May 23, 1997) addressing rod insertion times at VCSNS after two recent (April 22 and 26, 1997) reactor trips. The data presented supported the Westinghouse conclusion that 12 foot fuel assemblies, with IFM grids and/or ZIRLO™ skeletons, are not susceptible to the insertion problems discussed in NRC Bulletin 96-01. The current cycle of operation at VCSNS contains both of these fuel assembly features.

Control rod insertion (all rods fully inserted) times at our facility were well within the Technical Specifications limit of 2.7 seconds for the beginning of Cycle 10 rod drop test and for both of the recent trips. Rod insertion times remained fairly constant over the last two operating cycles. At the time of the trips (335 days of continuous operation) there were twenty (20) assemblies with burnups greater than 40,000 MWD/MTU. Four (4) of these assemblies were in the region of concern with burnups greater than 45,000 MWD/MTU.

- The testing time table suggested by the supplement (i.e., shutdown every 2500 MWD/MTU) does not give consideration to how near to the end-of-cycle a plant may be. Plants at a boron concentration of 100 ppm or less at all rods out, Hot Full Power conditions may have difficulty returning to power depending upon their

capability to process the large amounts of waste water that would be required for dilution at that point in core life. Plants near EOC conditions should be allowed to postpone testing to the end of cycle as they may be forced into early outages potentially coinciding with peak power demands.

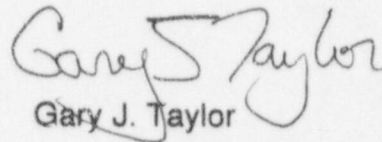
- The testing time table also does not take into consideration any plant trips which may occur in between test intervals. Plant trips that occur with complete rod insertion even though rod drop time data may or may not be available coincident with the trip event should be credited to the data collection. The next subsequent test should take place 2500 MWD/MTU from the burnup at time of trip.
- The NRC's assessment of the backfit implications of the extensive efforts that would be required by the proposed supplement is wholly inadequate to comply with the NRC's backfit rule, 10 CFR 50.109. The proposed action is much more than an information request, since it clearly imposes new testing requirements on licensees. Such testing is not currently required by any specific regulation, and is not a test described in the Appendix B criterion on test controls. Accordingly, the proposed request would impose a backfit as defined in 10 CFR 50.109(a)(1) and would not come within the "compliance" exception of the rule. The NRC, however, has not provided the requisite backfit analysis under the standards of Section 50.109(a)(4) to demonstrate that the proposed actions would provide a substantial increase in overall safety and that the costs are justified in view of that increase.

A backfit analysis, which objectively assesses the costs and benefits of the proposed actions, is particularly important in this case. Since the new testing requirements could result in frequent plant shutdowns, the NRC's action could have a massive cost impact on affected plants in addition to the adverse safety consequences from cycling the reactors. The backfit rule requires the NRC to consider these factors by assessing whether the proposed action would produce a "substantial" increase in "overall" safety (weighing both the positive and negative impacts on safety). Furthermore, the analysis of direct and indirect costs under the backfit rule must consider, among other things, plant "downtime" associated with the proposed action and "continuing costs" (e.g., new engineering resources for carrying out the required testing program), 10 CFR 50.109(c)(5).

In summary, SCE&G believes that the NRC's application of the Bulletin requirements to all Westinghouse and Babcock and Wilcox plants is without basis. The requirements should only be imposed on those plants with the specific susceptibility factors identified by the fuel vendors. Indiscriminate imposition of the testing requirements described in this supplement will create economic hardship on utilities, increase risk of plant transients and is being imposed without an adequate backfit analysis.

Should you have any questions regarding these comments, please call Mr. Charles McKinney at (803) 345-4723.

Very truly yours,


Gary J. Taylor

jt/GJT

c: J. L. Skolds
W. F. Conway
R. R. Mahan
R. J. White
L. A. Reyes
A. R. Johnson
NRC Resident Inspector
S. F. Fipps
W. M. Herwig

T. D. Gatlin
B. L. Johnson
J. B. Knotts, Jr.
NSRC
RTS (IEB 960001)
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DMS (RC-97-0129)
J. C. Butler (NEI)
K. J. Vavrek (WOG)